REMARKS

This amendment responds to the office action mailed June 16, 2006. In the office action the Examiner rejected claims 1-9, 11-20 under 35 U.S.C. 102(b) as anticipated by Lin (US 001/0020216).

After entry of this amendment, the pending claims are: claims 1-9 and 11-20.

Overview of Claim Changes

The term "corrections to an ionospheric model" has been replaced with "updates to an ionospheric model". This revision does not change the intended scope of the claims, but rather is intended to disambiguate "corrections to a model" from "corrections to a measurement." Other changes have been made to the same claims to be consistent with the use of term "updates".

The preamble of claim 17 has been amended to clarify that the claim is directed to a computer readable medium.

New claims 21-24 are computer readable medium claims corresponding generally to method claims 3-4 and 6-7. Claim 18 has been amended to correspond generally to method claim 2.

New claims 25-32 are system claims corresponding generally to method claims 1-8.

Grammatical errors involving incorrectly conjugated verbs have been fixed. For example, the phrase "the instructions . . . comprises" has been corrected to read "the instructions . . . comprise," and the phrase "the first set . . . include" has been corrected to read "the first set . . . includes."

Detailed Response 35 U.S.C. 102(b)

In the present office action the Examiner has rejected claims 1-9 and 11-20 as being anticipated by Lin (US 2001/0020216). The Applicants disagree and traverse.

There is a fundamental difference between computing corrections to a model (i.e., updating the model) and computing corrections to a measurement using the model. As explained in more detail below, Lin computes corrections to phase measurements using an ionospheric model, but never computes updates to the ionospheric model itself. In contrast, the pending claims require computing updates to an ionospheric model.

Independent claims 1 and 17 as amended include the limitation of "computing . . . updates to an ionospheric model based on code and carrier-phase measurements obtained using signals from the respective satellite on both the first and second frequencies." Similarly, independent claim 9 as amended includes "updates to an ionospheric model" that

are calculated "when signals on both of the two frequencies were available." In a previous response dated 9/15/2005, Applicants argued that these limitations distinguished the claimed invention from Lin: "While Lin has an ionospheric model 501 (p. 8, paragraph 153), Lin does not teach or suggest correcting the ionospheric model using GPS signals as claimed herein." The Examiner disagreed, arguing that the atmospheric model in Lin "is corrected when there are cycle slips using single or dual frequencies. . . . As indicated by Lin, the ionospheric model is continually corrected during cycle slips by the ambiguity resolution block 504."

Output of the ionospheric model in Lin indeed is used by ambiguity resolution block 504 to correct for cycle slip, as described in paragraph 153 and shown in fig. 8. Paragraph 156 further states that "[t]he delay of ionospheric and tropospheric propagation . . . are computed by the ionospheric model and tropospheric model . . . and are input to the multi-mode ambiguity resolution 504." Paragraph 157 then describes different methods for detecting cycle slip and states that "repairs are made though [sic: through] correcting all subsequent phase observations for this satellite and this carrier phase by a fix [sic] amount." Finally, paragraph 158 describes using the cycle-slip detection and repair algorithm to calculate the distance between the satellite and the receiver.

At no point in this description, however, does Lin mention updating the ionospheric model, as required by claims 1 and 17. The Lin system uses the ionospheric model in its measurements, but does not then update the ionospheric model based on the results of the measurements. This lack of feedback can be seen in fig. 8: there is a one-way arrow from ionospheric model 501 to the multi-mode ambiguity resolution algorithm 504. No output from the algorithm feeds back to the ionospheric model. In other words, while ambiguity resolution algorithm 504 uses the ionospheric model to make measurement corrections, it never corrects the ionospheric model itself. Instead, it merely calculates a single fixed offset for all subsequent phase observations, as described in paragraph 157. Lin never describes making corrections, or updates, to the ionospheric model.

Because Lin does not disclose updating an ionospheric model, removal of this ground for rejection is requested.

Furthermore, there is a second limitation in the independent claims that distinguishes the claimed invention from Lin. Specifically, claims 1 and 17 require making updates "before the time period" in which a signal is lost. Similarly, claim 9 requires making updates "when signals on both of the two frequencies were available." The claimed invention thus

updates its ionospheric model in the absence of ambiguity resulting from loss of a signal. Lin only discusses its ionospheric model in the context of "carrier phase integer ambiguity." See ¶ 153. Specifically, Lin describes inputting the output of the ionospheric model to the ambiguity resolution algorithm 504. See ¶ 156. Lin never discusses using the ionospheric model during time periods when no ambiguity exists.

Because Lin does not disclose updating an ionospheric model before the time period in which a signal is lost, removal of this ground for rejection is requested.

CONCLUSION

In light of the above amendments and remarks, the Applicant respectfully requests that the Examiner reconsider this application with a view towards allowance. The Examiner is invited to call the undersigned attorney at (650) 843-7501, if a telephone call could help resolve any remaining items.

Respectfully submitted,

Date: September 18, 2006

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